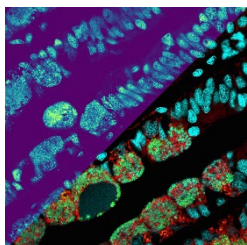


## Taking a Microscale Look at Host-Microbe Interactions: Visualising Cells and Chemicals in One Picture

Talk by Group Leader **Dr. Manuel Liebeke**  
Max Planck Institute for Marine Microbiology,  
Bremen, Germany

Drinks, snacks and networking after the talk in the Lounge

Date	Location	Registration
Friday 1 <sup>st</sup> October 2021 14:30	Technical University of Denmark Bldg. 101, Room S09	by 27.09.21 at <a href="https://cemist.dtu.dk/calendar">https://cemist.dtu.dk/calendar</a>



Small molecules – metabolites – provide the basis for chemical interactions between hosts and microbes. Most current techniques are unable to spatially link the metabolic phenotype and genotype of microorganisms in situ at a scale relevant to microbial interactions. Mass Spectrometry Imaging (MSI) and Fluorescence Microscopy provide powerful tools to address the technical challenge of linking metabolite production to symbiont and host cells in mixed communities and study spatial metabolomes of symbioses in situ.

In this talk, I will focus on the potential of correlative MSI on an uncultivable, invertebrate-microbe system at the micrometer level to reveal the secret chemical life of microbes (1). In our lab, we integrate chemical imaging with 3D tomography and microscopy, a culture-independent approach to connect anatomic structure and metabolic function in millimeter-sized symbiotic animals. We developed a correlative imaging workflow to connect the in situ production of metabolites with the organ-scale and cellular 3D distributions of mutualistic and pathogenic (micro)organisms in the same host animal (2).

**Manuel Liebeke** is head of the Metabolic Interactions group at the Max Planck Institute for Marine Microbiology in Germany. His research focuses on the chemical interactions between bacterial symbionts and their eukaryotic hosts. He is an expert in Mass Spectrometry based Metabolomics. His group develops High-resolution Spatial Imaging Methods for in situ measurements of metabolites in host-microbe systems. Manuel is visiting the Center for Microbial Secondary Metabolites, CeMiSt, funded by an Otto Mønsted Guest Professorship.



(1) Geier et al. *Nature Microbiology* 2020 'Spatial metabolomics of in situ host-microbe interactions at the micrometre scale'

(2) Geier et al. *PNAS* 2021 'Connecting structure and function from organisms to molecules in small animal symbioses through chemo-histo-tomography'